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TO : Commissioner for Patents
Mail Stop: Appeal Brief - Patents

FROM : Oleg F. Kaplun, Esq. of Fay Kaplun & Marcin, LLP

DATE : February 19, 2008

SUBJECT : RFID Division
U.S. Patent Appln. Serial No. 10/690,390
for *Full-Duplex Radio Frequency Echo Cancellation*
Inventor(s): Duron et al.
Our Ref.: 40150/00301

NUMBER OF PAGES INCLUDING COVER : 12

MESSAGE:

Please see attached.

Thank you.

Attorney Docket No. 40150/00301 (1534)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s)	:	Duron et al.
Serial No.	:	10/690,390
Filed	:	October 21, 2003
For	:	Full-Duplex Radio Frequency Echo Cancellation
Group Art Unit	:	2611
Confirmation No.	:	2375
Examiner	:	Jaison Joseph

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By: Oleg F. Kaplun (Reg. No. 45,559) Date: February 19, 2008

TRANSMITTAL

Transmitted herewith please find a Reply Brief in response to the Examiner's Answer mailed on January 29, 2008 for filing in the above-identified application. No fees are believed to be required. However, the Commissioner is hereby authorized to charge any required fees to the **Deposit Account of Fay Kaplun & Marcin, LLP No. 50-1492.** A copy of this paper is enclosed for that purpose.

Respectfully submitted,

Dated: February 19, 2008

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Serial No.: 10/690,390
Attorney Docket No.: 40150/00301
Reference No.: 1534

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	)	
	)	
Duron et al.	)	
	)	
Serial No.: 10/690,390	)	Group Art Unit: 2611
	)	
Filed: October 21, 2003	)	Examiner: Jaison Joseph
	)	
For: FULL DUPLEX RADIO FREQUENCY ECHO CANCELLATION	)	**Board of Patent Appeals and Interferences**
	)	
Confirmation No.: 2375	)	

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REPLY BRIEF UNDER 37 C.F.R. § 41.41

In response to the Examiner's Answer mailed on January 29, 2008 to the Appeal Brief filed November 15, 2007, and pursuant to 37 C.F.R. § 41.41, Appellants present this Reply Brief in the above-captioned application.

This is an appeal to the Board of Patent Appeals and Interferences from the Examiner's final rejection of claims 1-17 and 19 in the Final Office Action dated May 2, 2007 as clarified in the Advisory Action dated July 10, 2007 and further clarified in the Examiner's Answer dated January 29, 2008. The appealed claims are set forth in the attached Claims Appendix.

1. Status of the Claims

Claims 1-17 and 19 were rejected in the Final Office Action. (See 5/2/07 Office Action). Dependent claim 18 has been determined to include allowable subject matter. (See Id.).

No amendment after final office action has been submitted.

Therefore, the final rejection of claims 1-17 and 19 is being appealed.

2. Grounds of Rejection to be Reviewed on Appeal

I. Whether claims 1-9 and 19 are unpatentable under 35 U.S.C. § 103(a) over U.S. Patent 6,236,315 to Helms (hereinafter "Helms") in view of U.S. Patent 4,335,214 to Levy (hereinafter "Levy").

II. Whether claims 10-17 are anticipated under 35 U.S.C. § 102(b) by Levy.

3. Argument

Claims 10-17 stand rejected under 35 U.S.C. § 102(b) as anticipated by Levy. (See 11/02/06 Office Action, page 3). Appellants wish to focus on whether Levy really teaches combining a feedback signal with a reflection signal, or demodulating such a signal into in-phase and quadrature signals, as recited in claim 10. The Appellants noted that the reasoning of the Examiner never identifies with any specificity what he regards as the "reflection signal" in Levy. Specifically, the Examiner identifies element 36 in Levy as meeting the step of demodulating a reflection signal into in-phase and quadrature signals, so the assumption apparently underlying the rejection is that the input into element 36 ought to be regarded as meeting the recited reflection signal. Accordingly, if that is the case, only one signal can rightfully be regarded in Levy as a reflection signal, namely, the signal reflected back on transmission channel 43.

In response to this line of reasoning, the Examiner asserts further assumptions and attempts to correspond such assumptions with the Specification of the present invention.

However, it is respectfully submitted that the Examiner has based the rejection and the explanation of the rejection on further incorrect assumptions.

The only mention of a reflection signal in Levy is when it states that "[s]purious signals also arise from indirect leakage producing delayed echoes by reflection at impedance mismatches at various points *along the transmission channel*." Column 1, lines 30-33 (emphasis added). Considering the further elements of claim 10 and the description of the reflection signal in the Specification, it appears that the reflection signal of claim 10 and the supposed reflection signal in Levy are not even comparable. That is, the reflection signal of claim 10 relates to when a transmitted interrogation signal is reflected off, for example, an RF tag. (See Specification, page 5 lines 5-7). The further elements of claim 10 support this definition. The only conclusion from the sole recitation regarding reflections in Levy is that reflections are unwanted inevitabilities from the signal being transmitted along the transmission channel. That is, even using a broadest interpretation of "reflection signal," it appears that the reflections of Levy would more appropriately be related to the echo signals of claim 10. Thus, it is respectfully submitted that the Examiner's basis of Levy disclosing a reflection signal is misplaced.

The Examiner continues to base the signal from the transmission channel 43 as a reflection signal passing through components 34, 35, 36, and 37. (See 1/29/08 Examiner's Answer, page 8). Specifically, the Examiner compares the signal passing through the components of Levy as the reflection signal passing through components 125, 140, 145, and 150 of the present application. Accordingly, the Examiner asserts that the input signal to component 36 of Levy is consistent with the Specification of the present application. However, even if all other misplaced assumptions made by the Examiner were deemed true, this assumption is misplaced. For the sake of argument, assuming the transmission channel 43 is a reflection signal

comparable to the one in the claims, the input signal from component 36 of Levy is *not* a reflection signal. Specifically, the reflection signal would only exist as the input to the passband filter 45. The output of the passband filter 45 would no longer be the reflection signal. That is, the output has "filtered" the reflection signal and would constitute a signal forming a basis to produce the analytical signal used to control the weighting coefficients upon passing through the digital complex demodulator 37. Thus, the input to the quadrature phase splitter 36 is a signal based on the reflection signal but not the reflection signal itself. However, it is again noted that the above discussion is based on the misplaced assumption that the transmission channel is even a reflection signal comparable to what is recited in the claim in the first place.

Thus, it is respectfully submitted that Levy does not demodulate a reflection signal into in-phase and quadrature signals. Accordingly, it is respectfully submitted that the rejection of claim 11 should be withdrawn. Because claims 11-13 depend from, and therefore include all the limitations of claim 10, these claims are also allowable.

Claim 14 recites "a demodulator to demodulate *a reflection signal* into an in-phase signal and a quadrature signal; a first filter to isolate an in-phase error signal from the in-phase signal; a second filter to isolate a quadrature error signal from the quadrature signal; a modulator to modulate the in-phase error signal and the quadrature error signal to create a feeback signal; and a combiner element to combine *the reflection signal* and the feedback signal to cancel at least a portion of radio frequency echo signals in *the reflection signal*." For the same reasons discussed with reference to claim 10, this is also allowable. It is respectfully submitted that the rejection of claim 14 should be withdrawn. Because claims 15-19 depend from, and therefore include all the limitations of claim 14, these claims are also allowable.

As for the rejection of claims 1-9, and 19 under 35 U.S.C. § 103(a) as unpatentable over by Helms in view of Levy, the Examiner admits Helms "is silent on combining the reflection signal and a feedback signal to cancel at least a portion of radio frequency signals in the reflection." (See 5/02/06 Office Action, page 5). For the same reasons as discussed with reference to claims 10 and 14, it is respectfully submitted that the neither the Helms patent nor the Levy patent, either alone or in combination, discloses or suggests demodulating a reflection signal into in-phase and quadrature signals. It is respectfully submitted that claim 1 and claim 8 and all claims depending therefrom are allowable and the rejection under 35 U.S.C. § 103 should be withdrawn.

4. Conclusion

For the reasons set forth above, Appellants respectfully request that the Board reverse all the rejections of the pending claims.

Respectfully submitted,

Date: 2/19/08

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CLAIMS APPENDIX

1. (Original) A system, comprising:

a transmitter element creating an interrogation signal and transmitting the interrogation signal; and

a receiver element receiving a reflection signal of the interrogation signal and combining the reflection signal and a feedback signal to cancel at least a portion of radio frequency echo signals in the reflection signal.

2. (Original) The system according to claim 1, wherein the feedback signal is derived by isolating an error component of the reflection signal.

3. (Original) The system according to claim 2, wherein the error component of the reflection signal is isolated in one of an in-phase signal and a quadrature signal.

4. (Original) The system according to claim 2, wherein the error component of the reflection signal is isolated by filtering the reflection signal.

5. (Original) The system according to claim 4, wherein the feedback signal is combined with the reflection signal within an impulse response time of a filtering element which is filtering the reflection signal.

6. (Original) The system according to claim 1, wherein the reflection signal is reflected by a radio frequency tag.

7. (Original) The system according to claim 1, wherein the feedback signal is derived through one of analog processing and digital processing.

8. (Original) A method, comprising the steps of:

receiving a reflection signal;

deriving a feedback signal from the reflection signal by isolating an error component of the reflection signal; and

combining the reflection signal and the feedback signal to cancel at least a portion of radio frequency echo signals in the reflection signal.

9. (Original) The method according to claim 8, wherein the error component of the reflection signal is isolated in one of an in-phase signal and a quadrature signal.

10. (Original) A method, comprising the steps of:

demodulating a reflection signal into an in-phase signal and a quadrature signal;

filtering the in-phase signal to isolate an in-phase error signal;

filtering the quadrature signal to isolate a quadrature error signal;

modulating the in-phase error signal and the quadrature error signal to create a feedback signal; and

combining the reflection signal and the feedback signal to cancel at least a portion of radio frequency echo signals in the reflection signal.

11. (Original) The method according to claim 10, wherein the filtering steps include one of low pass filtering, band pass filtering and high pass filtering.

12. (Original) The method according to claim 10, further comprising the step of:

amplifying the feedback signal prior to the combining step.

13. (Original) The method according to claim 10, further comprising the steps of:

converting the in-phase signal and the quadrature signal from an analog signal to a digital signal; and

converting the in-phase error signal and the quadrature error signal from a digital signal to an analog signal.

14. (Original) A system, comprising:

a demodulator to demodulate a reflection signal into an in-phase signal and a quadrature signal;

a first filter to isolate an in-phase error signal from the in-phase signal;

a second filter to isolate a quadrature error signal from the quadrature signal;

a modulator to modulate the in-phase error signal and the quadrature error signal to create a feedback signal; and

a combiner element to combine the reflection signal and the feedback signal to cancel at least a portion of radio frequency echo signals in the reflection signal.

15. (Original) The system according to claim 14, wherein the first and second filters are one of a low pass filter, a band pass filter, a high pass filter and a base-band digital radio.

16. (Original) The system according to claim 14, wherein the combiner element is one of a radio frequency splitter and a directional coupler.

17. (Original) The system according to claim 14, further comprising:

an amplifier to amplify the feedback signal before input into the combiner element.

19. (Original) The system according to claim 14, further comprising:

a third filter to filter the feedback signal before input into the combiner element